

# IP 6

# Sustainability



The Actual Cost of a Chromebook  
*Dell Chromebook 3100*



Created by Joseph Villella for ETEC 511 - UBC MET Program



# Purchase Cost

*\$380.25*





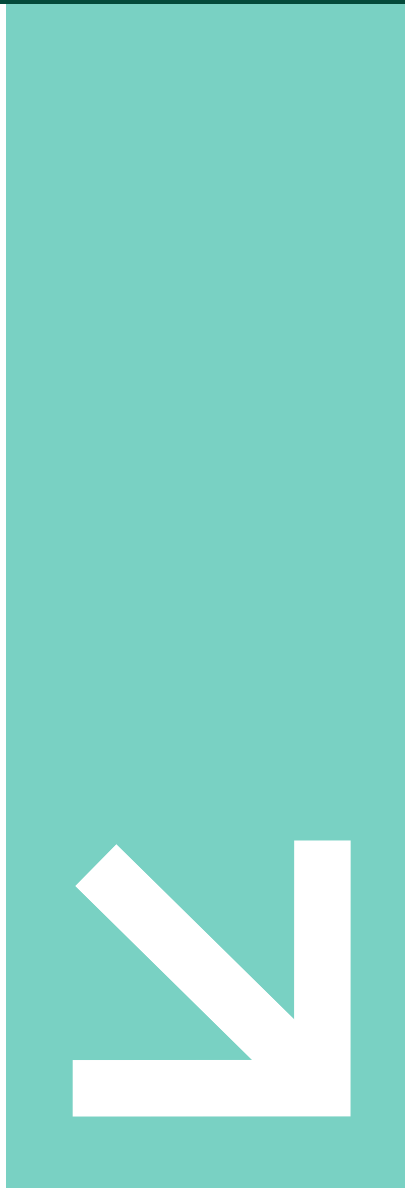
## Dell.ca

The cost to purchase the Dell 3100 Chromebook for Education from Dell's website is \$339.00. After tax, shipping, and other fees the total cost is \$380.25.

## Includes...

Chromebook, Charger, Quick Start Guide, Safety/Environment Regulatory Guide, Cardboard/Plastic Packaging

	Chromebook 11 3100	CAD \$520.50
	Quantity 1	CAD \$339.00
	Get it by Fri., Oct. 21	
Items (1)		CAD \$520.50
Savings		- CAD \$181.50
Delivery		FREE
GST (5%)		CAD \$16.98
PST (7%)		CAD \$23.77
Eco Fee 		CAD \$0.50
<b>Total</b>		<b>CAD \$380.25</b>





# The Actual Cost

Products should not only be seen as having a monetary cost. The creation of products from conception to sale have costs to our environment and our global community.

## Environmental Cost

Traditional manufacturing and usage costs of electronics is a concept which many understand. However, the environmental cost of cloud computer, especially with how integrated the cloud is with ChromeOS, is somewhat forgotten. The pollution problem of these technologies is still present, but is now hidden in large data centers far away (Crawford, 2021, p. 41).

## Human Cost

Product development has a human cost, and specifically for laptops requiring precious minerals, an ethical cost. As Dell has stated, the challenge to source metal and minerals that are "conflict free" is incredibly difficult (Crawford, 2021, p. 35)





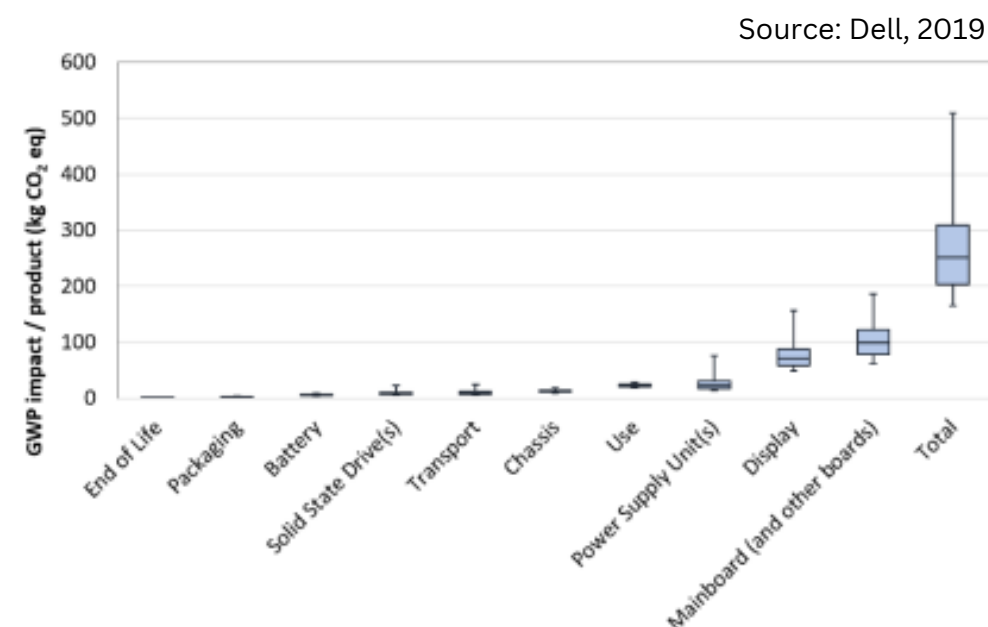
# Environmental Cost

*266kgCO<sub>2</sub>e +/- 50kgCO<sub>2</sub>e*



## Carbon Footprint

The carbon footprint of the Dell Chromebook 3100 is 266kgCO<sub>2</sub>e +/- 50kgCO<sub>2</sub>e (Dell, 2019). 87.5% of this footprint relates to the manufacturing of the product while only 8.5% relates to usage (Dell, 2019). This was calculated by Dell assuming a 4 year lifetime of the device (although most educational leases are for 3 years).



**1 of these products...**  
has a footprint approx.  
equivalent to **driving 652 miles**  
in a passenger car.



**10 of these products...**  
have a footprint approx.  
equal to what **3.1 acres of US forests**  
can absorb in a year.



**100 of these products...**  
have a footprint about the  
same as the annual  
average carbon footprint  
of **5 people**.

Source: Dell, 2019

# Other Environmental Costs

## Battery

Lithium-ion batteries require minerals which have an environmental cost. Toxic chemicals can leak into water supplies during their collection or if batteries are not recycled properly (Katwala, 2018).

## Packaging Materials

Although the cardboard packaging of Dell Chromebooks is recyclable and biodegradable, some of it may be seen to be unnecessary. Specifically, including a quick start guide and paper regulatory information should be revisited.

## Data Center Reliance

As the need for data centers increase, the cost to the environment will also increase. This is evident as the amount of data centers built in the past 5 years has doubled compared to the entire past decade (Mills, 2020).

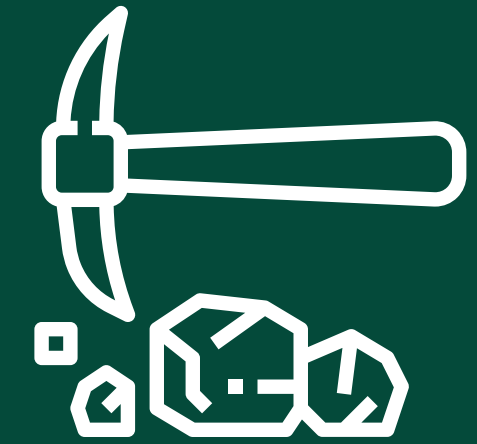
## Improper Recycling

Based on my school's lease structure, a class set of Chromebooks will last for 3 years. After that, they are sent for either reuse or recycling. If they are improperly recycled, hazardous waste and materials negatively impact the environment.



# The Human Cost

## *Immeasurable*



Areas in Central Africa are known to produce conflict minerals. These minerals are seen as conflict minerals since there are many instances of sexual violence and human right abuse relating to them (Buss, 2018, p. 546).

Technology companies have been pressured to ensure these needed minerals are obtained from suppliers who can verify they are conflict-free. Dell produces a yearly "[Conflict Minerals Report](#)" and has an [initiative](#) in which they aim to only source minerals from ethical and sustainable suppliers (Dell, 2022). Their program does not only relate to Central Africa as it ensures all minerals they use are sourced ethically.



# My Thoughts



## The Human Cost

It is important for all technology companies to source only conflict-free and ethical materials. This is the only way to force systematic changes in regions that it is desperately needed.



## Regulatory/Quick Start

Companies should move all regulatory information papers and "quick start" guides to online sources. For those without online access, this information should be put on the necessary manufacturer's packaging (outside of the box).



## Recycled Materials

Companies should source more recycled materials to reduce their environmental footprint. Acer has recently shown the Vero 514 which focuses on sustainability by using recycled materials that are easily repairable (Walbank, 2022).



## Environmental Initiatives

Companies should focus on educating consumers on their own environmental initiatives both to educate on issues and keep themselves accountable.



# References

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